The Commonwealth of Massachusetts

Department of Public Health
250 Washington Street, Boston, MA 02108

Department of Environmental Protection
1 Winter St., Boston, MA 02108

Post This Notice Near Each Hydrofluosilicic Acid Metering Pump.
Do Not Remove or Cover this Notice in Any Way.

Standard Operating Procedure (SOP)
Hydrofluosilicic Acid (H2SIF6) Fluoride Metering Systems

1) When handling hydrofluosilicic acid, always wear rubber gloves, apron, and eye protection for safety. Avoid skin, nose, and eye contact. Refer to the material safety data sheet (MSDS) and state DPH water fluoridation training course manual for more detailed information on how to properly handle the fluoride compound.

2) Inspect the fluoride metering pump daily for proper operation and air binding, bleed as necessary according to manufacturer's recommendations. Always wear gloves, apron, and eye protection for safety.

3) Inspect suction and discharge piping or tubing for leaks, especially at fittings and connections. Tighten or replace as necessary after cleaning up spillage.

4) Record on the official monthly form the gallons of water produced and net amount of pounds of hydrofluosilicic acid used in the last 24 hour period. If the pounds of hydrofluosilicic acid are low or high, investigate as necessary. For example, if low, was the metering pump air bound; or if high, did the percent hydrofluosilicic acid strength increase from using a different shipment or barrel? A rule of thumb is to expect 31 to 43 pounds or 3 to 4 gallons of hydrofluosilicic acid consumed per million gallons of water optimally fluoridated.

5) If well or pump station has been in operation pumping water for at least five to ten minutes, collect a water sample from the state approved representative sample tap. It is usually tapped 100 feet outside the building wall. Test it on your fluoride laboratory tester according to the recommended instruction. Record concentration in parts per million (ppm) fluoride on the official monthly form, rounded off to nearest tenth of a ppm. For example, round off 0.85 ppm as 0.9 ppm. It is encouraged that more than one sample reading be taken daily.

6) Visually or using the scale reading, check the level or depth of hydrofluosilicic acid in the day tank or barrel which is located on the scale. A droplight suspended behind the translucent plastic day tank will help to see the level. Add or transfer AWWA and NSF approved hydrofluosilicic acid when low or less than 24 hours worth of hydrofluosilicic acid remains. Do not overfill the tank. If your day tank has been identified as too large, do not overfill past "Full Mark".

7) Always wear rubber gloves, apron, and eye protection when handling or adding hydrofluosilicic acid to the day tank. Add the pale or yellow colored liquid chemical slowly without spilling, and turn off metering pump temporarily for 5 minutes to help avoid air binding. Do not leave the fill process unattended. Clean up any spills properly. (Refer to MSDS for more information.).

8) Do not dilute the hydrofluosilicic acid with water in the day tank prior to pumping.

9) Keep scale in proper working order and test accuracy semi-annually by adding known weights. Maintain flexible horizontal connectors for outside vent, suction line, and fill line if so equipped.

10) Verify the day tank cover is securely fastened to the day tank ensuring there are no leaks using gaskets and bolts if necessary. Fill plug, if so equipped, must be inserted.

11) Verify the day tank is continuously vented to the outside to exhaust fumes and is not blocked by snow, wildlife, or water traps.

12) Store unopened barrels of hydrofluosilicic acid upright, out of direct sunlight, and separate from other waterworks chemicals. Do not drop or roll barrels. Instead, use hand trucks and automatic lift gates. Do not leave barrels open when not in use. Use proper tool to remove barrel plug. (Your supplier may sell proper tool.)

13) If you store hydrofluosilicic acid in large storage tank(s) greater than 1,000 gallons: A) Verify the correct chemical is being added during delivery by using labeled fill pipe; B) Do not allow overfilling of bulk tank(s) especially through outside vent; C) Inspect for leaks; D) Check level remaining to avoid running out; E) Do not add water to hydrofluosilicic acid or allow rainwater, snowmelt, or groundwater to enter tanks or piping.

14) Check strength in percent of hydrofluosilicic acid monthly using hydrometer while wearing gloves, apron, and eye protection. Strength varies between 22 to 30 percent depending upon vendor.

15) Adjust the metering pump stroke length or strokes per minute adjustment upward or downward to maintain a 1.0 ppm fluoride (average) in the finished water. Normally this adjustment is not made often.

16) Check to make sure the metering pump's spring loaded diaphragm type anti-siphon valves or back-pressure valves on the discharge line are present. They must never be removed, to avoid possible siphoning or an overdose of fluoride. If removal is necessary, install a spare immediately! **CAUTION – If a spare is not available, shut off the electric power to the metering ump and remove suction line or shut off suction line ball valve until the anti-siphon valve is replaced.**

17) Check monthly the metering pump electric interlock or pacing system to insure the fluoride metering pump shuts down completely when the well or pump station is off line. If not practical, do not perform, and seek state assistance.

18) Any fluoride concentration over 2 ppm must be reported immediately to the DPH and DEP as follows:

Who to Contact	During Working Hours	Outside of Normal Working Hours
DPH	**617-624-6074.** Office of Oral Health	**617-983-6800** (Via the Mass Division of Epidemiology and Immunization Emergency Call Center)
Mass DEP	**Regional Office** or **617-292-5770**	**1-888-304-1133** (via Massachusetts Emergency Management Agency (MEMA))

19) In the event of a fluoride concentration over 4 ppm, shut off the fluoride metering pump immediately until state assistance is available.

20) The recommended optimal fluoride concentration is 1.0 ppm with a permissible increase of 0.2 ppm above or 0.1 ppm below that amount.

21) If you have any questions on this SOP contact DPH or DEP at the numbers noted above.